



PATENT APPLICATION
PO7958
MD02-182

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF)	
)	
SCOTT GRACE ET AL)	GROUP ART UNIT: 1711
)	
SERIAL NUMBER: 10/694,107)	EXAMINER: Olga Asinovsky
)	
FILED: October 27, 2003)	
)	
TITLE: ACRYLATE-FUNCTIONAL BLOCKED)	
POLYISOCYANATE RESIN FOR)	
UV/THERMALLY CURABLE COATINGS)	

CORRECTED APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

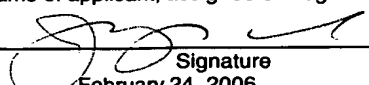
This is an appeal from the Office Action dated July 11, 2005, wherein the Examiner finally rejected Claims 1 through 13 in this application (all the claims presently pending). A Notice of Appeal was filed on September 29, 2005. Appellants received a communication dated January 31, 2006, requiring that the "SUMMARY OF CLAIMED SUBJECT MATTER" section of the Appeal Brief refer to the specification by page and line number ("P___, L___").

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enveloped addressed to: Assistant Commissioner for
Patents, Washington, D.C. 20231 02/24/06

Date

Joseph C. Gil, Reg. No. 26,602

Name of applicant, assignee or Registered Representative


Signature
February 24, 2006
Date

I. REAL PARTY IN INTEREST

This application was assigned by the inventor(s) to Bayer MaterialScience LLC and Bayer Aktiengesellschaft, the real parties in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no pending appeals or interferences of which Appellants are aware that would be affected by or have an effect on the Board's decision in this appeal.

III. STATUS OF CLAIMS

The present application was originally filed with Claims 1 through 9. In an amendment dated May 2, 2005, Claims 1, 6 and 9 were amended to their present language and Claims 10, 11, 12 and 13 were added. Claims 1 through 13 are the only claims pending in this application.

IV. STATUS OF AMENDMENTS

No amendments were filed subsequent to the Office Action dated July 11, 2005.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present claimed invention is directed to 1) a non-aqueous, dual-cure composition (P3, L19-20; original Claims 1 through 5; and present Claims 1 through 5), 2) a process for preparing a coated substrate (P3, L20; P8, L8-12; original Claims 6 through 8; and present claims 7 through 8) and 3) a coated substrate (P3, L20; P8, L8-12); original Claim 9; and present Claims 9 through 13). The composition comprises:

- a) from about 5 to about 85% by weight of a blocked (cyclo)aliphatic polyisocyanate (P3, L22-23) prepared by
 - i) reacting a hydroxy-functional (meth)acrylate with an organic (cyclo)aliphatic polyisocyanate with an NCO to OH equivalent ratio of from about 1.5:1 to about 3:1 (P3, L24-27), with the resultant partially blocked isocyanate having an isocyanate group content of from about 5 to about 13% by weight (P3, L27-

30), and wherein said organic polyisocyanate is selected from the group consisting of uretdione-containing (P5, L24), biuret-containing (P5, L24), isocyanurate-containing (P5, L20-24) and urethane-group containing (P5, L25) polyisocyanates, and

- ii) reacting the remaining isocyanate groups with a blocking agent (P3, L1-2),
- b) from about 5 to about 85% by weight of a hydroxy-functional polymer having an OH number of from about 10 to about 250 and an acid number of from about 0.1 to about 50 (P4, L3-6), with the equivalent ratio of blocked isocyanate groups to hydroxy groups being from about 0.8:1 to about 1.2:1 (P4, L6-8), said hydroxy-functional polymer being selected from the group consisting of saturated polyesters, unsaturated polyesters, and mixtures thereof (P4, L8-11),
- c) from 0 to about 65% of an ethylenically unsaturated compound selected from the group consisting of ethylenically unsaturated monomers, polymers containing ethylenic unsaturation (other than unsaturated polyesters), and mixtures thereof (P4, L12-16) and
- d) from about 0.1 to about 7.0% by weight of a UV initiator for free-radical polymerization (P4, L17-18),

wherein the percentages by weight total 100%, and with the proviso that if ingredient b) is a saturated polyester, ingredient c) is present in an amount of from about 20 to about 65% by weight (P4, L19-21).

The process of preparing of preparing a coated substrate (Claims 6 through 8) comprises mixing components a) through d) (P8, L8-9), applying the composition to a substrate (P8, L 9-10) and curing the composition by UV curing and thermal curing (P8, L 10-12). The coated substrate comprises the substrate coated by the process of Claims 6 through 8)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1 through 13 stand rejected under 35 U.S.C.103 as being unpatentable over the Bruchmann et al reference (U.S. Patent 6,617,413).

VII. ARGUMENTS

CLAIMS 1 THROUGH 13 ARE NOT RENDERED OBVIOUS UNDER 35 USC 103 BY THE BRUCHMANN ET AL REFERENCE (U.S. PATENT 6,617,413).

Claims 1 through 13 were finally rejected under 35 U.S.C. 103 as being unpatentable over the Bruchmann et al reference (U.S. Patent 6,617,413). Appellants respectfully submit that the reference does not fairly suggest the claimed invention.

As noted above, the composition of the present invention is prepared by reacting a blocked polyisocyanate, an hydroxyl-functional polymer, optionally an ethylenically unsaturated compound selected from a specified group of compounds and a UV initiator. The blocked polyisocyanate must be prepared from a **polyisocyanate selected from the group consisting of uretdione-containing, biuret-containing, isocyanurate-containing and urethane-group containing polyisocyanates.**

The reference does not even remotely suggest the preparation of such a blocked polyisocyanate. The reference describes a composition that requires an isocyanate (designated as "I"). As specifically described compound I does contain ethylenically unsaturation (see the definition of R³ - column 3, lines 21ff). As specifically described compound I must be free from uretdione, biuret or isocyanurate groups (see column 3, lines 8 - 10). The reference also nowhere hints that the isocyanate could be a urethane-group-containing polyisocyanate (see the long list of isocyanates listed in column 3, lines 26 through 54).

In the Final Office Action, the Examiner, while recognizing the above deficiency, relied upon the disclosure appearing in column 4, lines 44ff. However, the disclosure relied upon by the Examiner clearly indicates that the isocyanates listed are used in mixtures with compound I (see column 4, line 45 and lines 53-54). Nowhere does the reference even remotely hint that the additional isocyanate could be used to prepare compound I. The reference further indicates that the isocyanates of formula (I) can be blocked. The reference does not fairly suggest that an isocyanate containing uretdione, biuret, or isocyanurate groups could or should be reacted with a hydroxy-functional (meth)acrylate with an organic (cyclo)aliphatic polyisocyanate with an NCO to OH equivalent ratio of from about 1.5:1 to about 3:1 and with the resultant partially blocked isocyanate having an isocyanate group content of from about 5 to about 13% by weight and that the remaining isocyanate groups should then be blocked.

In the Office Action following the Final Office Action, the Examiner has apparently recognized the shortcomings of the reference and indicated the following:

"[B]ruchmann discloses a dual -cure system comprising a mixture of a polyisocyanate having formula (I) at column 3, line 15 and at least one other polyisocyanate specified in the present claims, column 4, lines 45-56. Both polyisocyanates are reactive with a hydroxyethyl (meth)acrylate. **The isocyanate groups can be blocked with pyrazoles.** The reactive binder(s) having functional groups is/are also present. the Hydroxyl-functional polymer such as saturated or unsaturated polyesters are readable in the present claims. Any additional polyisocyanate such as a compound (I) would be expected in the present invention to improve coating composition viscosity and adhesive properties with moist substrates. The coating composition is a solvent borne composition." (sic) (emphasis added)

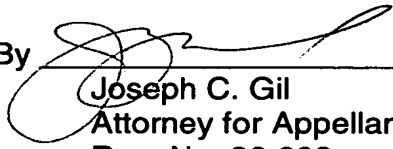
The reference indicates that the isocyanate groups of the compound (I) can be blocked (see column 4, lines 35 - 43). As clearly described by the reference, compounds of formula (I) must be free of uretdione, biuret and isocyanurate groups (see column 3, lines 8-10). Nowhere in the reference is there even the slightest hint that a blocked isocyanate should be prepared from an isocyanate containing uretdione, biuret, or isocyanurate groups.

The statement that "[A]ny additional polyisocyanate such as a compound (I) would be expected in the present invention to improve coating composition viscosity and adhesive properties with moist substrates" implies that the Examiner now believes that the reference suggests a) mixing the compound of formula (I) with an isocyanate containing uretdione, biuret, or isocyanurate groups, b) reacting the mixture with an OH-functional (meth)acrylate, c) blocking the remaining isocyanate groups, and d) reacting the resultant mixture of blocked isocyanates with an OH-functional polymer and a UV initiator to somehow improve the properties of the resultant product. Clearly the reference contains no such suggestion.

Appellants respectfully submit that the references cited by the Examiner do not fairly suggest the presently claimed invention. Clearly any rejection thereover under 35 U.S.C.103 is improper.

Respectfully submitted,

By



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VIII. CLAIMS APPENDIX

The following is a listing of the claims on appeal.

Claim 1. A non-aqueous, dual-cure composition comprising:

- a) from about 5 to about 85% by weight of a blocked (cyclo)aliphatic polyisocyanate prepared by
 - i) reacting a hydroxy-functional (meth)acrylate with an organic (cyclo)aliphatic polyisocyanate with an NCO to OH equivalent ratio of from about 1.5:1 to about 3:1, with the resultant partially blocked isocyanate having an isocyanate group content of from about 5 to about 13% by weight, and wherein said organic polyisocyanate is selected from the group consisting of uretdione-containing, biuret-containing, isocyanurate-containing and urethane-group containing polyisocyanates, and
 - ii) reacting the remaining isocyanate groups with a blocking agent,
- b) from about 5 to about 85% by weight of a hydroxy-functional polymer having an OH number of from about 10 to about 250 and an acid number of from about 0.1 to about 50, with the equivalent ratio of blocked isocyanate groups to hydroxy groups being from about 0.8:1 to about 1.2:1, said hydroxy-functional polymer being selected from the group consisting of saturated polyesters, unsaturated polyesters, and mixtures thereof,
- c) from 0 to about 65% of an ethylenically unsaturated compound selected from the group consisting of ethylenically unsaturated monomers, polymers containing ethylenic unsaturation (other than unsaturated polyesters), and mixtures thereof and

- d) from about 0.1 to about 7.0% by weight of a UV initiator for free-radical polymerization,
said percentages by weight totaling 100%, and with the proviso that if ingredient b) is a saturated polyester, ingredient c) is present in an amount of from about 20 to about 65% by weight.

Claim 2. The composition of Claim 1, wherein the hydroxy-functional polymer comprises a saturated polyester.

Claim 3. The composition of Claim 1, wherein the ethylenically unsaturated compound comprises an alkanediol diacrylate.

Claim 4. The composition of Claim 1, wherein the ethylenically unsaturated compound comprises 1,6-hexanediol diacrylate.

Claim 5. The composition of Claim 1, wherein the blocking agent comprises dimethylpyrazole (DMP).

Claim 6. A process for preparing a coated substrate comprising

- a) mixing:
- i) from about 5 to about 85% by weight of a blocked (cyclo)aliphatic polyisocyanate prepared by
- A) reacting a hydroxy-functional (meth)acrylate with an organic (cyclo)aliphatic polyisocyanate at an NCO to OH equivalent ratio of from about 1.5:1 to about 3:1, with the resultant partially blocked isocyanate having an isocyanate group content of from about 5 to about 13% by weight, and wherein said organic polyisocyanate is

- selected from the group consisting of uretdione-containing, biuret-containing, isocyanurate-containing and urethane-group containing polyisocyanates, and
- B) reacting the remaining isocyanate groups with a blocking agent,
- ii) from about 5 to about 85% by weight of a hydroxy-functional polymer having an OH number of from about 10 to about 250 and an acid number of from about 0.1 to about 50, with the equivalent ratio of blocked isocyanate groups to hydroxy groups being from about 0.8:1 to about 1.2:1, said hydroxy-functional polymer being selected from the group consisting of saturated polyesters, unsaturated polyesters, and mixtures thereof,
 - iii) from 0 to about 65% of an ethylenically unsaturated compound selected from the group consisting of ethylenically unsaturated monomers, polymers containing ethylenic unsaturation (other than unsaturated polyesters), and mixtures thereof and
 - iv) from about 0.1 to about 7.0% by weight of a UV initiator for free-radical polymerization,
- said percentages by weight totaling 100%, and with the proviso that if ingredient ii) is a saturated polyester, ingredient iii) is present in an amount of from about 20 to about 65% by weight,
- b) applying the resultant composition to said substrate, and
 - c) curing the composition, by UV curing and thermal curing, to form the coating.

Claim 7. The method of Claim 6, wherein the UV curing is performed before thermal curing.

Claim 8. The method of Claim 6, wherein the thermal curing is performed before UV curing.

Claim 9. A coated substrate comprising a substrate having applied thereto a coating produced by

- a) mixing:
 - i) from about 5 to about 85% by weight of a blocked (cyclo)aliphatic polyisocyanate prepared by
 - A) reacting a hydroxy-functional (meth)acrylate with an organic (cyclo)aliphatic polyisocyanate at an NCO to OH equivalent ratio of from about 1.5:1 to about 3:1, with the resultant partially blocked isocyanate having an isocyanate group content of from about 5 to about 13% by weight, and wherein said organic polyisocyanate is selected from the group consisting of uretdione-containing, biuret-containing, isocyanurate-containing and urethane-group containing polyisocyanates, and
 - B) reacting the remaining isocyanate groups with a blocking agent,
 - ii) from about 5 to about 85% by weight of a hydroxy-functional polymer having an OH number of from about 10 to about 250 and an acid number of from about 0.1 to about 50, with the equivalent ratio of blocked isocyanate groups to hydroxy groups being from about 0.8:1 to about 1.2:1, said hydroxy-functional polymer being selected from the group consisting of saturated polyesters, unsaturated polyesters, and mixtures thereof,
 - iii) from 0 to about 65% of an ethylenically unsaturated compound selected from the group consisting of ethylenically unsaturated monomers, polymers containing ethylenic unsaturation (other than unsaturated polyesters), and mixtures thereof and
 - iv) from about 0.1 to about 7.0% by weight of a UV initiator for free-radical polymerization,

said percentages by weight totaling 100%, and with the proviso that if ingredient ii) is a saturated polyester, ingredient iii) is present in an amount of from about 20 to about 65% by weight,

- b) applying the resultant composition to said substrate, and
- c) curing the composition, by UV curing and thermal curing, to form the coating.

Claim 10. The composition of Claim 1, wherein said organic polyisocyanate is a uretdione-containing polyisocyanate.

Claim 11. The composition of Claim 1, wherein said organic polyisocyanate is a biuret-containing polyisocyanate.

Claim 12. The composition of Claim 1, wherein said organic polyisocyanate is an isocyanurate-containing polyisocyanate.

Claim 13. The composition of Claim 1, wherein said organic polyisocyanate is a urethane-group-containing polyisocyanate.

IX. EVIDENCE APPENDIX

Appellants have not submitted any evidence.

X. RELATED PROCEEDINGS APPENDIX

Appellants have not identified any applications under Section II, entitled "RELATED APPEALS AND INTERFERENCES". Accordingly, there is nothing to submit under this section.



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LETTER

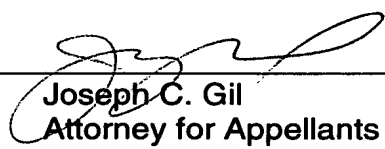
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Alexandria, VA 22313-1450

Sir:

Enclosed is a **CORRECTED** Appeal Brief in the matter of the subject Appeal.
Should any fees be required with the filing of the corrected Brief, please charge to
Deposit Account Number 13-3848. Triplicate copies of this paper are enclosed.

Respectfully submitted

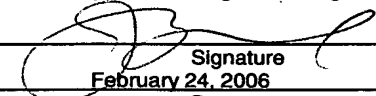
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enveloped addressed to: Assistant Commissioner for
Patents, Washington, D.C. 20231 February 24, 2006
Date

Joseph C. Gil, Reg. No. 26,602
Name of applicant, assignee or Registered Representative


Signature
February 24, 2006
Date